

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 September 2005 (15.09.2005)

PCT

(10) International Publication Number
WO 2005/085059 A1

(51) International Patent Classification⁷: **B63B 39/06,**
35/44, 22/02

(21) International Application Number:
PCT/NO2005/000074

(22) International Filing Date: 2 March 2005 (02.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
20041019 10 March 2004 (10.03.2004) NO

(71) Applicant (for all designated States except US): **MOSS**
MARITIME AS [NO/NO]; P.O.Box 120, N-1325 Lysaker
(NO).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KRISTENSEN, Per,**
Herbert [NO/NO]; Mallingsrudveien 28, N-1349 Rykkinn

(NO). **PETTERSEN, Erik** [NO/NO]; Grindene 3, N-3408
Tranby (NO). **HUSEM, Ida** [NO/NO]; Alfheimveien 9A,
N-1358 Jar (NO). **SKOGEN, Tor** [NO/NO]; Under-
haugsveien 10C, N-1358 Jar (NO).

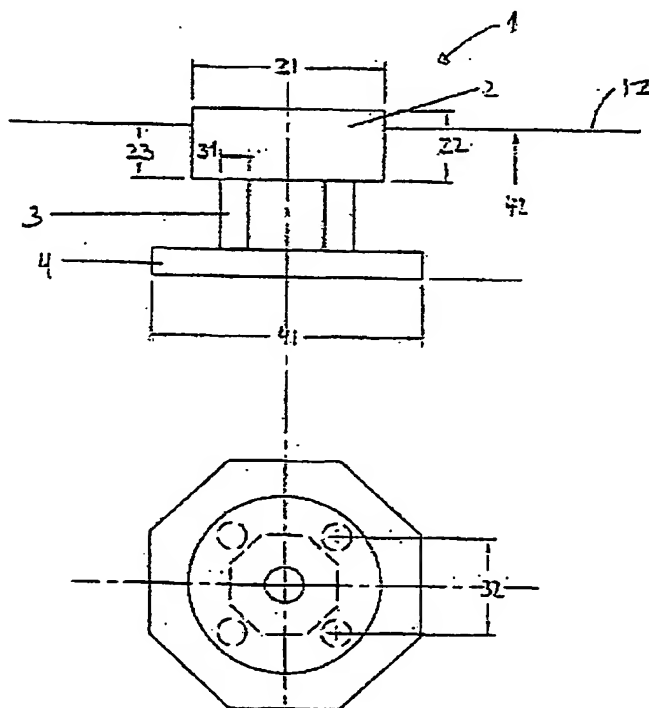
(74) Agents: **ONSAGERS AS** et al.; P.O.Box 6963 St. Olavs
plass, N-0130 Oslo (NO).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MY, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,
ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: **FLOATING STRUCTURE**



(57) Abstract: The present invention relates to a floating loading buoy (1) comprising a surface element (2), columns (3) connecting the surface element (2) to a submerged pontoon element (4), mooring devices (5) for securing the loading buoy (1) to the seabed (6), at least one attachment point (7) for transfer pipelines (8) from a production/processing/storage unit (9) to the loading buoy (1), mooring and transfer devices (10) for transferring fluid from the loading buoy (1) to a loading/unloading vessel (11). The surface element (2) is arranged floating in the water plane surface (12) and has a substantially rounded cross section in a substantially horizontal plane and a draught in the body of water, the columns (3) extend from the surface element (2) down to the pontoon element (4), which in a substantially horizontal plane has a substantially rounded external perimeter and a draught in the body of water. The proportion of the volume of the pontoon element (4) divided by the waterline area of the surface element (2) is in the range 4-7m, and preferably approximately 6m, and the draught of the surface element (2) divided by the draught of the pontoon element (4) is in the range 0.31-0.43 and where the vertical mooring rigidity for the loading buoy (1) is over 50% of the waterline rigidity for the loading buoy (1).

WO 2005/085059 A1

BEST AVAILABLE COPY



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GI, GM, GR, GU, HT, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MY, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.